



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,915	01/05/2002	Steven Teig	SPLX.P0022	3779
23349	7590	10/28/2004	EXAMINER	
STATTLER JOHANSEN & ADELI			THOMPSON, ANNETTE M	
P O BOX 51860			ART UNIT	PAPER NUMBER
PALO ALTO, CA 94303			2825	

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/040,915

Applicant(s)

TEIG ET AL.

Examiner

A. M. Thompson

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003 to 15 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 27-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35-41 and 50-54 is/are allowed.
- 6) ☒ Claim(s) 27-33 is/are rejected.
- 7) ☒ Claim(s) 34,42-49 and 55 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 04/28/2003; 09/17/2003; 09/29/2003; 11/19/2003;
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Applicants' amendment to 10/040,915 has been examined. Claims 27, 35, 42, 49 and 50 are amended. Claims 27-55 are pending.

#### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Claim Objections***

2. Claims 27, 34, 42, 49 and 55 are objected to because of the following informalities: Pursuant to claim 27, "the set of sub-regions" lack sufficient antecedent basis. Pursuant to claim 34, "the center of the sub-regions" lack sufficient antecedent basis. Pursuant to claims 42 and 49, it is unclear how routing paths "store a route". Pursuant to claim 55, the limitations recite a "third set of instructions" and delineates steps a) and b); however, claim 50 already recites a third set of instruction and already includes steps a) and b). Claims dependent from objected to base claims are likewise objected to. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Rejection of claims 27-33**

4. Claims 27-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiyama et al.; U.S. Patent 5,657,242. Sekiyama discloses a method of determining routes for a plurality of wiring connections. However, Sekiyama discloses wiring regions, wiring layers, wiring directions and wiring connections (referenced as nets, col. 7, ll. 17-23). Although Sekiyama focuses on circuit boards, it would have been obvious to one of ordinary skill in the art that the Sekiyama disclosure is also applicable to an IC layout. Indeed, a circuit board represents a layout of IC components and as such the routing method that applies to a circuit board would also be applicable and transferable to any IC layout.

5. Pursuant to claim 27, Sekiyama discloses a method of routing a set of nets within a region of an IC (Fig. 8), wherein each net with the set has a set of routable elements (col. 7, ll. 47-50), comprising a) using a first set of lines to partition the IC region into a plurality of sub-regions (col. 7, ll. 18-23); b) defining at least one particular route for each particular net in the set (col. 7, ll. 46-51), wherein each particular route traverses the set of sub-regions that contain the net (col. 8, ll. 21-41); and using a second set of line to measure congestion of routes for the nets within the IC region (col. 7, ll. 54-64), wherein at least a plurality of the lines in the second set are different from the lines in the first set.

6. Pursuant to claim 28, wherein the first set of lines forms a first set of grids, and the second set of lines forms a second set of grids (col. 2, ll. 46-58 discloses wiring in the X and Y directions, respectively).

7. Pursuant to claim 29, wherein the second set of lines includes intersecting diagonal lines that form a diagonal grid (see also Fig. 28 (a); col. 4, ll. 58-67 suggest orthogonal directions).
8. Pursuant to claim 30, wherein the first set of lines includes intersecting horizontal and vertical lines that form a first rectilinear grid (Fig. 26 (a)).
9. Pursuant to claim 31, wherein the second set of lines further includes intersecting horizontal and vertical lines that form a second rectilinear grid (Fig. 26(b)).
10. Pursuant to claim 32, further comprising using the second rectilinear grid to measure the congestion of routes and using the diagonal grid to measure the congestion of routes (col. 7, ll. 23-36).
11. Pursuant to claim 33, wherein the second rectilinear grid is identical to the first rectilinear grid (cf. Figs. 26(a) and 26(b)).

***Allowable Subject Matter***

12. Claims 35-41, 50-54 are allowed.
13. The following is a statement of reasons for the indication of allowable subject matter: In a method of routing a set of nets within an integrated circuit layout, the prior art does not teach identifying the capacity of diagonal routing paths and using these identified capacities to define routes.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. Please reference the PTO-892 for a complete listing.

Art Unit: 2825

Any inquiry concerning this communication or earlier communications should be directed to Examiner A.M. Thompson whose telephone number is (571) 272-1909. The Examiner can usually be reached Monday thru Friday from 8:00 a.m. to 4:30 p.m..

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Responses to this action should be mailed to the appropriate mail stop:

Mail Stop \_\_\_\_\_

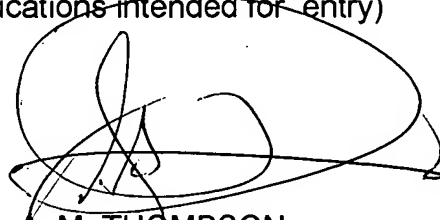
Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306, (for all **OFFICIAL** communications intended for entry)



A. M. THOMPSON  
Primary Examiner  
Technology Center 2800